# Technology Opportunity

## Power Systems Simulation Library

NASA Lewis and other Government agencies have co-funded a joint, ongoing development of comprehensive software to simulate the performance of power systems and motor drives. The current focus is on aerospace and military applications.

### Potential Commercial Uses

- Engineering analysis and design via component and system-level simulations
- Planning and design of power systems for
  - Spacecraft
  - Military and commercial aircraft
  - Shipboard distribution
  - Drive systems within utility power systems

### Benefits

- Capable of in-depth or high-level, end-to-end system simulation
- Applicable to designers, manufacturers, and application engineers of power and drive systems
- Good match between reduced-order and detailed model simulation results
- Easy add-ons to library because of software modularity
- Automatic formation of generic systems
- Real-time simulation allows virtual prototyping

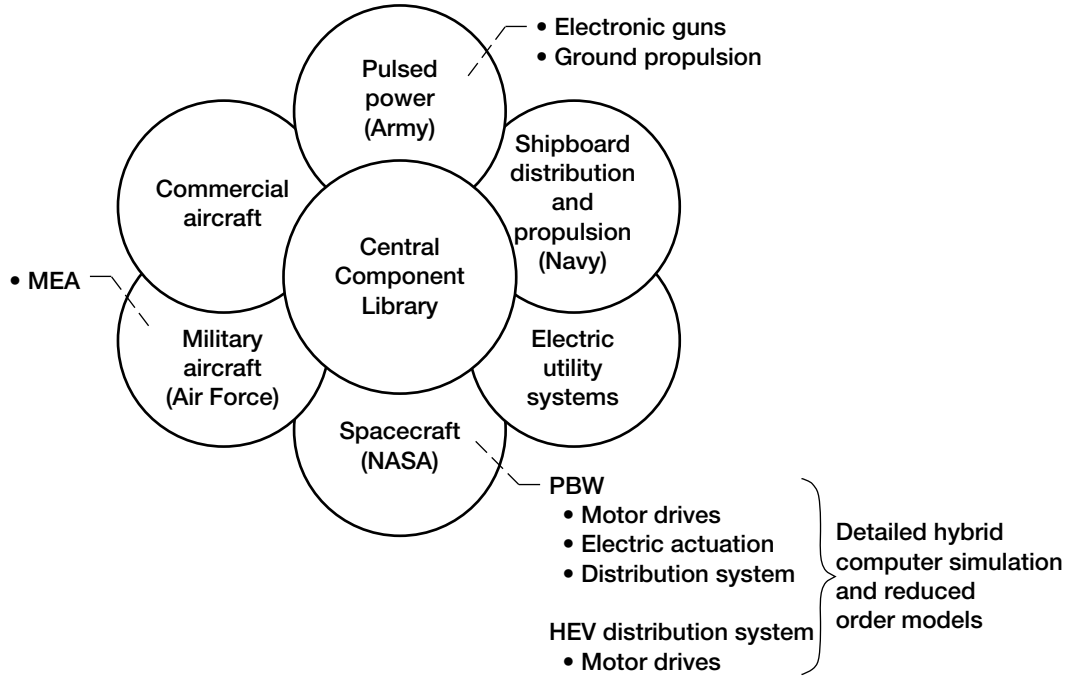


Figure 1.—Simulation library concept (MEA = more electric aircraft; PBW = Power-By-Wire Aircraft; and HEV = Hybrid electric vehicle).

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## The Technology

The completed software, with its extensive library of component models, will enable detailed analysis and simulation of ac and dc power distribution and drive systems for aircraft, spacecraft, ground vehicles, ships and utility systems. The simulation library, the concept of which is depicted in figure 1, will comprise detailed and simplified computer models of components commonly used in these systems. User-preferred systems or built-in generic systems can be automatically generated from a specified component-level diagram, for subsequent end-to-end system study. Simulations can be performed either in a time domain, for a detailed or nonlinear reduced-order system, or in a frequency domain, for a linearized reduced system.

## Options for Commercialization

Currently, the sponsoring Government agencies are the planned users of the simulation library. In a subsequent commercialization phase, participation by industry will be sought for aerospace and nonaerospace applications.

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## Key Words

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Aircraft power systems
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